

AMENDMENT TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A data embedding device for embedding objective data to be embedded in a speech code obtained by encoding a speech in accordance with a speech encoding method based on a voice generation process of a human being, comprising:

an embedding judgment unit, for every speech code, which is outputted from a code excited linear prediction (CELP) encoder, to perform judgment processing to judge whether or not a speech code is capable of embedding data based on a liner spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code ~~output from a code excited linear prediction~~ outputted from the CELP encoder before output of the speech code;
[and]

an embedding unit to perform embedding processing to embed data to be embedded in a part of a LSP code, a pitch lag code and a fixed code, defined as embedding object parameter codes, among a speech code for which it is judged by the embedding judgment unit that a speech code is capable of embedding data, wherein the embedding unit replaces the embedding object parameter codes with the data to be embedded and the embedding unit performs the embedding processing with respect to the speech code, for which it is judged by the embedding judgment unit that the speech code is capable of embedding data, among speech codes which are outputted from the CELP encoder and pass through the embedding unit itself; and

a unit to provide the embedding judgment unit with the speech codes passed through the embedding unit, wherein the embedding judgment unit uses at least one of the speech codes as the past speech code~~wherein the embedding judgment unit performs the judgment processing based on the past speech code after completion of the embedding processing performed by the embedding unit.~~

2. (previously canceled)

3. (currently amended) A data extraction device for extracting data embedded in a speech code, comprising:

a reception unit to receive speech codes including a speech code containing embedded data;

an extraction judgment unit to, for every speech code, which is received by the reception unit, judge whether or not data is being embedded in a speech code based on a liner spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code, which is one of the speech codes received by the reception unit before reception of the speech code~~output from a code excited linear prediction encoder, wherein the past speech code is identical to a past speech code which was used for judging whether the speech code is capable of embedding data;~~ and

an extraction unit to extract data being embedded in a part of a LSP code, a pitch lag code and a fixed code among a speech code for which it is judged by the extraction judgment unit that data is being embedded.

4. (previously canceled)

5. (currently amended) A data embedding/extraction device for executing a process for embedding data in a speech code and a process for extracting embedded data from the speech code, comprising:

an embedding judgment unit to perform judgment processing, for every speech code, which is outputted from a code excited linear prediction (CELP) encoder, to judge whether or not a speech code is capable of embedding data based on a linear spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code~~output~~ outputted from a code excited linear prediction~~the CELP encoder before output of the speech code;~~

an embedding unit to perform embedding processing to embed data in a part of a LSP code, a pitch lag code and a fixed code, defined as embedding object parameter codes, among a speech code for which it is judged by the embedding judgment unit that a speech code is capable of embedding data, wherein the embedding unit replaces the embedding object parameter codes with the data to be embedded, wherein the embedding judgment unit performs the judgment processing based on the past speech code after completion of the embedding processing performed by the embedding unit and the embedding unit performs the embedding processing with respect to the speech code, for which it is judged by the embedding judgment unit that the speech code is capable of embedding data, among speech codes which are outputted from the

CELP encoder and pass through the embedding unit itself;

a unit to provide the embedding judgment unit with the speech codes passed through the embedding unit, wherein the embedding judgment unit uses at least one of the speech codes as the past speech code;

a reception unit to receive speech codes including a speech code containing embedded data;

an extraction judgment unit to, for every speech code, which is received by the reception unit, judge whether or not data is being embedded in a speech code based on a liner spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code, which is one of the speech codes received by the reception unit before reception of the speech code wherein the past speech code is identical to a past speech code which was used for judging whether the speech code is capable of embedding data; and

an extraction unit to extract data being embedded in a part of a LSP code, a pitch lag code and a fixed code among a speech code for which it is judged by the extraction judgment unit that data is being embedded.

6. (currently amended) A data embedding method for embedding data in a speech code, comprising:

performing, for every speech code, which is outputted from a code excited liner prediction (CELP) encoder, judging processing to judge whether or not a speech code is capable of embedding data based on a linear spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code outputted from a code excited liner prediction the CELP encoder before output of the speech code; [and]

performing embedding processing to embed data in a part of a LSP code, a pitch lag code and a fixed code, defined as embedding object parameter codes, among a speech code for which it is judged that a speech code is capable of embedding data, wherein the embedding includes replacing the embedding object parameter codes with the data to be embedded; and

providing the judging processing with speech codes including a first speech code, which has been outputted from the CELP decoder and data have been embedded by the embedding processing and a second speech code, which has been outputted from the CELP decoder and no data have been embedded by the embedding processing, wherein the judging processing uses at least one of the speech codes as the past speech code wherein the judging is performed

~~based on the past speech code after completion of the embedding.~~

7. (previously canceled)

8. (currently amended) A data extraction method for extracting embedded data from a speech code, comprising:

receiving speech codes including a speech code containing embedded data;

judging, for every speech code, which is received by the receiving, whether or not data is being embedded in a speech code based on a liner spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code, which is one of the speech codes received by the receiving before reception of the speech code~~output from a code excited linear prediction encoder, wherein the past speech code is identical to a past speech code which was used for judging whether the speech code is capable of embedding data;~~ and

extracting data being embedded in a part of a LSP code, a pitch lag code and a fixed code, defined as embedding object parameter codes, among a speech code for which it is judged that data is being embedded.

9. (previously canceled)

10. (currently amended) A data embedding/extraction method with respect to a speech code obtained by encoding a speech in accordance with a speech encoding method based on a voice generation process of a human being, comprising:

performing, for every speech code, which is outputted from a code excited liner prediction (CELP) encoder, judging processing to judge ~~judging~~ whether or not a speech code is capable of embedding data based on a linear spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code ~~output~~ outputted from a ~~code excited liner prediction~~ the CELP encoder before output of the speech code;

performing embedding processing to embed data in a part of a LSP code, a pitch lag code and a fixed code, defined as embedding object parameter codes, among a speech code for which it is judged that a speech code is capable of embedding data, wherein the embedding replaces the embedding object

~~parameter codes with the data to be embedded, wherein the judging is performed based on the past speech code after completion of the embedding~~and the embedding performs the embedding processing with respect to the speech code for which it is judged by the embedding judgment unit that the speech code is capable of embedding data among speech codes which is outputted from the CELP encoder and passes through the embedding unit itself; providing the judging processing with speech codes including a first speech code, which has been outputted from the CELP decoder and data have been embedded by the embedding processing and a second speech code, which has been outputted from the CELP decoder and no data have been embedded by the embedding processing, wherein the judging processing uses at least one of the speech codes as the past speech code;

receiving speech codes including a speech code containing embedded data;

judging, for every speech code, which is received by the receiving, whether or not data is being embedded in a speech code based on a liner spectrum pair (LSP) code, a pitch lag code, a fixed code and a gain code included in a past speech code, which is one of the speech codes received by the receiving before reception of the speech code~~output from a code-excited linear prediction encoder, wherein the past speech code is identical to a past speech code which was used for judging whether the speech code is capable of embedding data;~~ and

extracting data being embedded in a part of a LSP code, a pitch lag code and a fixed code among a speech code for which it is judged that data is being embedded.

11-20. (previously cancelled)